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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,593	11/13/2003	Khurram Muhammad	TI-34776	8991
23494 7590 08/08/2007 TEXAS INSTRUMENTS INCORPORATED P O BOX 655474, M/S 3999 DALLAS, TX 75265			EXAMINER LE, DINH THANH	
			ART UNIT 2816	PAPER NUMBER
			NOTIFICATION DATE 08/08/2007	DELIVERY MODE ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspto@ti.com  
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## Office Action Summary

Application No.

10/712,593

Applicant(s)

MUHAMMAD ET AL.

Examiner

DINH T. LE

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 2-20 and 24-40 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 17-20 and 30-40 is/are allowed.
- 6) ☒ Claim(s) 2, 4, 6-8, 16, 24, 26 and 28 is/are rejected.
- 7) ☒ Claim(s) 3, 5, 9-15, 25, 27 and 29 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

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## **FINAL REJECTION**

The objection of claims 26-27 is withdrawn in view of the amendments to these claims.

The rejection on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 8-15 of copending Application No. 11/388,558 are withdrawn in view of the arguments presented in the Amendment.

The rejections over Simon et al (GB 2230627) and Lee et al (US 5,732,002) are withdrawn in view of the arguments presented in the Amendment.

### ***Claim Objection***

Claim 30 is objected to because of the following informalities: "signal" on line 3 should be corrected as --signal;--. Appropriate correction is required.

### ***Claim Rejections***

#### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 2, 4, 6-7, 16, 24 and 26 are rejected under 35Usc 102 (b) as being anticipated by Yasuda (US 6,181,740).

Regarding claims 4, 16 and 24, Yasuda discloses in Figures 3 and 9 a circuit comprising:

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- a IIR filter (105, Figure 3) which including a plurality of single pole IIR filters in cascade (C11, SW11) and C12, SW12). Noted that each pole is formed by a capacitor of the capacitors (C11-C1n);
- means for direct sampling (SW1, SW2) coupled to the filter (105); and
- at least one amplifier stage (401) coupled to the filters (Figure 9).

Regarding claims 2 and 6, wherein the cascade of single pole IIR filters together implement a high order filter devoid of amplifier.

Regarding claim 7, wherein the cascade of single pole IIR filters is operational to create a uni-directional flow of information, signal, or charge and disallow any feedback from a later filter stage to an earlier filter stage.

Claims 8, 16 and 28 are rejected under 35 USC 10(b) as being anticipated by Avidsson et al (US 6,414,541).

Arvidsson et al discloses in Figure 1 a filter circuit comprising:

- a cascade of IIR filters (C1-C6, S1-S6, n1-n6) comprising a history capacitor (C1); and
- a first rotary capacitor (C2).
- Noted that each pole of the filter is formed by a capacitor of the capacitors (C1-C6).

### ***Response to Applicant's Arguments***

The applicant argues that Yamada does not suggest the limitation "history capacitor" and "sampling n consecutive samples on n distinct capacitors and of n samples does not affect the

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output produced by the next window of n sample”. The arguments are not persuasive because this limitation is not recited in the rejected claims.

The applicant argues that Arvidsson does not propose “cascade of single pole IIR filters”. The argument is not persuasive because each capacitor in the cascaded capacitors (C1-C6) of Arvidsson provides a single pole.

### ***Allowable Subject Matter***

Claims 17-20 and 30-40 are allowed because the prior art of record fails to suggest the “history capacitor” as recited in claim 17, “the feedback loop” as combined in claims 30 and 37.

Claims 3, 5, 9-15, 25, 27 and 29 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. These claims are allowed because the prior art of record fails to suggest the “multi-tap direct sampling mixer”, “buffer capacitor and a second capacitor bank” in combination as claimed.

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

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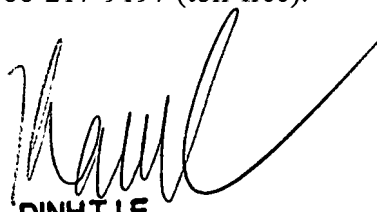
will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DINH T. LE whose telephone number is (571) 272-1745. The examiner can normally be reached on Monday-Friday (8AM-7PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Drew Richards, can be reached at (571) 272-1736.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

7/28/07

  
DINH T. LE  
PRIMARY EXAMINER